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THEORY.

"Away with your theories in respect to teaching. Give us something practical, if you will talk upon the subject. If we must be 'directed' and 'guided' and 'instructed,' let the directions and teachings be something tangible; let them be such that we can apply them to the daily operations of the school-room; such as will stand the test of actual experiment, and not the feverish productions of addled brains, leading the simpletons who attempt to reduce them to practice, into innumerable difficulties and mortifying failures. Save us from your 'theories,' your 'systems,' your 'principles,' and let us be guided by plain facts, by our own observation and experience."

Such protests as the above are sometimes heard from teachers, and occasionally from very good teachers, against all attempts to systematize the educational art, and to collect its principles into a science. The complaints remind us of the method said to have been adopted by a Western lawyer, for carrying a case in which the rules of law were against him. His "brother" on the opposite side, a regularly educated advocate from the East, had just finished a fine specimen of forensic oratory, in which he had made ample quotations from the highest legal authorities to sustain his points, and into

which he had introduced, with skill and taste, some expressions from classic literature. The jury were amazed at the learning and eloquence which had been poured out upon them, and were evidently ready to award their verdict to him who had so scientifically impressed them, when our "practical" friend, who, although he knew neither Greek, Latin, nor Blackstone, knew his men on the jury, suddenly changed the aspect of affairs, by the following exordium: — "May it please your honor and gentlemen of the jury, I am astonished at the course pursued by this new-fangled fellow from the Lord-knows-where. What arguments has he brought forward to the honorable gentlemen in the jury box? None at all; — none at all, I say. He has socked with old Socrates, ripped with old Euripides, squinted with old Quintilian, and talked about all creation; but, yer honor, *what does he know about Wisconsin law?*"

Very little, it must be confessed, for our contemner of theoretic law carried with him judge, jury, and spectators; the case was decided in favor of his client; and all in accordance with what then constituted "Wisconsin law." And yet, most men of sense believe that it is well for a barrister to have studied Greek, Latin, and Law, other than that of Wisconsin.

Theory is useful in all departments of human knowledge. The very highest achievements of the human intellect are expressed in theories. Progress is effected by theory. Without it knowledge would consist of disjointed facts, with little or no generalization.

But this word is used in different senses. It may be used to mean "a doctrine or scheme of things which terminates in speculation, without a view to practice;" or it may mean "an exposition of the general principles of any science." In the remarks just made, we did not intend to use the word in the sense first specified. Sometimes again the word theory is employed to denote a proposed "philosophical explanation of phenomena." In this sense it is the expression for a high *effort* of the intellect, an out-reaching of the mind after truth. And theorizers in this sense, if they are honest and earnest, come in time to be theorizers in the higher sense, — they suc-

ceed in mastering the principles of new sciences, they enlarge the field of knowledge, and with every discovery of a general truth, carry the human mind one step onward in its progress towards the Infinite. But in this progress, the first imperfect theories will need constant modification, and the framer of them, in order to succeed, must be ready at any moment to abandon them, should the new facts derived from observation, or the new relations discovered by thinking, require it.

And from this we see that the complaint, as above expressed, implying as it does, an antagonism between theories and facts, misrepresents the case. For every theory, to be sound or useful, must be based upon facts of one kind or another, either such as are gleaned from observation, or such truths as the Creator has implanted in the soul. This is because our minds are finite. We can see only a few things at a time. We must, therefore, ascend from particulars to generals. Our logic must be inductive. The Infinite only can grasp all general principles without recourse to the facts to which they apply.

But we are not about to write a dissertation on the subject of Theories. We only desire to protest against the protest, as in the Great and General Court, they offer an amendment to the amendment.

But it takes men of some calibre to establish sound theories. You remember Christopher Columbus and Sir Isaac Newton, to speak of no others, both of whom were inveterate theorizers, and who proposed theories that have been of incalculable value to all mankind, since their days. They, however, were men of brains, and were, besides, indefatigable workers. They were men in whom a noble power of intellect was accompanied by an untiring energy of will; and shall we, small people, attempt either to walk in their giant footsteps or to strike out for ourselves a course like theirs in some other direction? Yes, we say, by all means. Not that we expect to do as much for human progress as Columbus or Newton, but we do hope to do something for ourselves by a careful comparison of facts, and by an honest and laborious seeking after general principles.

In education, our Newton is yet to come. But that he will come, let no one doubt. And in the meantime let us prepare for his advent by collecting for his use all the valuable material we can. For the Newton of Astronomy, the Chaldean Shepherds looked forth upon the young heavens in the morning of time, and recorded the wonders they saw; for him Thales and Pythagoras observed and theorized; for him Euclid demonstrated, and Ptolemy and the Ptolemaists constructed their incomprehensible cycles; for him Galileo peered into the heavenly depths with his magic eye of glass; and for him Copernicus revived the ancient theory. Tycho looked forth from the dome of Uraniberg, and Kepler discovered his laws and proportions. He inherited the capital of facts and inferences which, through a line of earnest inquirers, had come down from the sages of remotest antiquity, accumulating in the hands of each new possessor, until at last it was ready to be invested in the most magnificent theory the world ever saw. And a noble income has the estate yielded to those who have since enjoyed the possession.

In a general way, we are now preparing the materials for him who is to construct the theory of teaching. So, we have the American Institute of Instruction, State Teachers' Associations, Teachers' Institutes, Normal Schools, and last, though not least, the "Massachusetts Teacher" and its compeers, whose function it is to keep a record of the educational thought and discoveries of the age. And are we to suppose that all this material is to go for naught? That no master mind is to seize upon it, and to eliminate from it the principles of a new science, noble in proportion to the lateness of its birth? That no future seer is to prophesy upon these dry bones, and to bring them together — bone unto his bone — and to bring sinews and flesh unto them, and to breathe into them the life-breath of a rational system? Verily, if this were so, human progress would come to an end remarkably abrupt. To believe this, is to believe that man is able to avail himself of the almost immeasurable advantage of a well-considered system in his dealings with matter, but that in the far more important treatment of mind, and that too in its formative period, and

in its normal state, he is to labor on at hap-hazard, without system and without plan. To us the thought seems not a little absurd.

And should this prophet appear among us to-day, how would he find his materials? Are they as abundant and highly elaborated as were those that came to the hand of the great astronomer? We fear not. Our profession has had its Ascham, its Pestalozzi and its Arnold, but these are comparatively all modern, and their number is very small at that. The truth is, that through all past time, teaching has been too much regarded as an incidental matter. Occasionally, to be sure, some great intellect, like Milton, could see the importance of methods of instruction, and the same may be said of some of the noblest minds of the ancient world, perhaps. But no one will say that taking the history of all the most civilized nations, so far as we have such history, we find as much attention given to education as to the military art, the science of jurisprudence, astronomy, &c. It has been reserved for us and our time, to see the ablest men in large communities giving their whole life and energy to the promoting of education, and to the study and development of its philosophy. Never before has such an outlay of money been made for education. Nothing is more common now than for the school appropriation, in our towns and cities, to exceed that for any other purpose. Education is the hobby of our age. We think about it, talk about it, and are willing to *pay* for it.

And let no one think that this new order of things is to produce no new effect; that nothing in the form of new knowledge, and more comprehensive ideas in regard to the work of education, is to result from all this labor, thought, and expense. Everybody's lens has its focus upon this single point, and though some of the instruments may be no better than the glasses of an old pair of spectacles, yet they help to illumine the object, and we may hope, by-and-by, to be able to see it with some distinctness.

And now, what are we teachers to do? The answer to this question will, of course, depend upon what we propose as our object in teaching. If we aim at present success, or what is called

success only; if our highest ambition is to pass along smoothly and easily, to get money, or enjoy a tinsel and short-lived reputation; if we propose these as the objects of our pedagogical efforts, we must refrain from troubling ourselves about making our teaching supply the highest moral and mental wants of our pupils, and be careful to avoid fashing ourselves about theories; for these things lead to an increase of work on the part of the teacher, and not always to an increase of reputation or of emolument.

But if we enter upon our labors with a determination to make them conducive to the highest good of our pupils, and ready to carry out this determination in a reasonable and intelligent way, we must carefully observe the effects of our teaching, so far as they can be observed, and compare them with what a high standard of excellence demands as the result of instruction. Where we see defects in our methods, — and a careful scrutiny will be very apt to disclose defects, — we must remedy them. We must compare the facts that come under our observation, and draw from them the inferences to which they lead, and we must compare our own conclusions with those of others, particularly with those of earnest and able workers in the educational field; and for this purpose, we must make ourselves acquainted with the most valuable educational literature. We must THINK and THEORIZE, being careful, however, that our theories do not take the bits in their teeth, and run away with us. Thus shall we help the good cause onward, and though our generalizations be as absurd as the Ptolemaic theory of the heavens, yet if they are made in good faith, and are the result of earnest and thoughtful labor, they will hasten the advent and facilitate the work of the coming theorizer, who is to announce the great laws by which mind gravitates towards knowledge.

This is our protest; and to show that we are speaking in good faith, and have no special hobby which we are desirous of trotting out, and whose paces and good points we are anxious to show, we propose to devote the remainder of this number of the "Teacher" to matters practical, so called.

R. E.

THE STUDY OF READING LESSONS.

"Beware of the man of one book."

THIS quaint old saying has, to our American ears, a strange sound. Accustomed as we are to make our way amid a hail-storm of facts and fancies, thoughts and arguments, it is scarcely possible for us to understand how much true wisdom is contained in this simple sentence of antiquity. We are tempted to regard it with contempt, as a fossil thought, a fragment of petrified wisdom, rather than a true and helpful word addressed to ourselves. Yet, may it not be as useful a guide to us here in New England, in this eager, restless, hurrying, nineteeth century, as to the Roman student of olden time, or to those of later years, yet living long ago, our own ancestors, as they sat in quiet meditation by their pleasant fire-sides, in the fatherland? No one would dream of taking it literally; yet even were it so considered, might not a deeper wisdom, a nobler development, be gained from the thorough study of one profound, suggestive book, than from the rapid, thoughtless perusal of a multitude of volumes? Its thoughts would become ours — its treasures of good and wise and beautiful words would be to us true riches. With each book thus studied, we should grow stronger and stronger; better fitted to be happy ourselves and to be useful to others.

This habit of careful study should, if possible, be formed in childhood or early youth, and to the teacher is intrusted, in a great degree, the responsibility of its formation. May it not be done in a way most pleasant to ourselves and to our pupils, and without interfering with the discharge of other duties? Experience convinces me that it is possible; and at the request of a friend, who has approved my plan and rejoiced in its success, I write a brief account of it, with the hope that it may prove of some benefit to others.

Before adopting it, I had often observed with regret, that the reading lessons were regarded by my pupils with little interest. They would come with bright, animated faces to

their recitations in history, geography, grammar, and arithmetic; but the appearance of the reading book was the signal for languor and restlessness. Especially was this the case when the lesson assigned had been read more than once. The charm of novelty was gone, and none other remained. They were often eager to leave it for one with which they were less familiar, while yet unable even to read the former with correct expression. For a long time I was greatly troubled by their indifference, and endeavored, in various ways, to give interest to the lesson; gradually I was led to adopt the mode of procedure which I will presently describe.

The reading-book used by the more advanced of my pupils — girls from twelve to fifteen years of age — contains many excellent selections; and from among these I chose a number which I deemed worthy of careful study. I examined each one, and ascertained how much labor it would require to be able to give a grammatical analysis of the sentences, and express their meaning in other words; to explain the historical allusions; and to describe the people, places, and productions of foreign lands, when these were mentioned in the passages studied. Sometimes a single paragraph of a sketch or essay, or two or three stanzas of a poem, would require all the time we could devote to the exercise in one day; sometimes we could easily and profitably take more; but always I endeavored to assign as nearly as possible that which would demand industry and effort, yet could be prepared without difficulty.

It was pleasant to see the eagerness with which they searched encyclopædias, gazetteers, and dictionaries; to answer their intelligent, thoughtful questions; and to give a clue to guide them out of their perplexities. The class which has recently left the school under my care, for one of a higher grade, entered with peculiar interest and delight into this kind of study; and to illustrate my plan more fully, I will, with your permission, bring them before you.

Imagine then a class of sixteen or eighteen girls, ready to begin their recitation, their reading-books open at a description of the river Nile. One of them reads as follows: —

"For many an hour have I stood upon the city-crowning

citadel of Cairo, and gazed unwearedly upon the scene of matchless beauty and wonder that lay stretched beneath my view — cities and ruins of cities, palm forests and green savannas, gardens, and palaces, and groves of olive. On one side, the boundless desert with its pyramids; on the other, the land of Goshen, with its luxuriant plains, stretching far away to the horizon. Yet this is an exotic land. That river winding through its paradise, has brought it from far regions unknown to man. That strange and richly varied panorama has had a long voyage of it! Those quiet plains have tumbled down the cataracts; those demure gardens have flirted with the Isle of Flowers, five hundred miles away; and those very pyramids have floated down the waves of the Nile. In short, to speak chemically, that river is a solution of Ethiopia's richest regions, and that vast country is merely a precipitate."

After analyzing the sentences and defining the more important words, various questions are asked. For example: Give some account of Cairo? What is a pyramid? Describe the Egyptian pyramids? What do you know of the land of Goshen? What is an exotic, and what is meant by an exotic land? In what form did those plains come down the cataracts? Give us some account of the cataracts of the Nile? How were those vast pyramids floated down the river? "In short, to speak chemically, that river is a solution of Ethiopia's richest regions, and that vast country is merely a precipitate." Explain this sentence? What is it to speak *chemically?* What is a solution and a precipitate? Why is it correct to use such terms here?

Another paragraph describes the annual inundation of the Nile: —

"The stream is economized within its channel until it reaches Egypt, when it spreads abroad over the vast valley. Then it is that the country presents the most striking of its Protean aspects: it becomes an archipelago, studded with green islands, and bounded only by the Libyan Hills and the purple range of the Mokattan Mountains. Every island is crowned with a village or an antique temple, and shadowy with palm-trees or acacia groves. Every city becomes a Venice, and the bazaars

display their richest and gayest cloths and tapestries to the illuminations that are reflected from the streaming streets."

Many interesting questions are here suggested. What are *Protean* aspects, and why so called? Where are the Libyan Hills and the Mokattan Mountains? Describe an Arab village — an ancient Egyptian temple — a palm tree — an acacia. Give some account of Venice. How does every city become a Venice? What is a bazaar?

We followed the study of "The Nile" with that of the poetical "Address to the Mummy in Belzoni's Exhibition." The manner of treating the first stanza will show the way in which the whole was studied.

> "And thou hast walked about — how strange a story!
> In Thebes's streets, three thousand years ago;
> When the Memnonium was in all its glory,
> And time had not begun to overthrow
> Those temples, palaces, and piles stupendous,
> Of which the very ruins are tremendous."

The class are asked if they know anything of the author of these lines, and of the traveller Belzoni; and having stated such facts as they have been able to procure respecting them, one is called upon to explain the first words of the poem.

"And thou has walked about." The writer speaks as if the mummy were actually before him, while writing. Do you think that this was the case? Lucy may answer.

"I suppose that he wrote the poem after returning from a visit to the exhibition, but remembered so perfectly how it looked, that he seemed still to be where he could see it."

Has any one a different opinion? Maria, you may give yours.

"I think that he might have composed a part, at least, of the poem while at the exhibition, and then have written it after returning home."

"How strange a story!" Harriet may tell why it was strange.

"Bodies usually decay in a short time, but this body had lasted thousands of years, owning to its having been embalmed. It seemed very strange to look at it, and remember that so

many years had passed away since it was alive, and yet it looked as it did when it used to walk through the streets of Thebes."

Alice, you may give some account of Thebes.

"Thebes was anciently the capital of Egypt. It is not known when it was founded, but the time of its greatest prosperity was, probably, when David and Solomon reigned in Judea. Its ruins are wonderful. They extend seven or eight miles on both sides of the Nile, from each bank to the enclosing mountains. The most remarkable are the temple of Karnac, the palace of Luxor, and the Memnonium. The mountains are pierced with tombs, many of which are richly adorned with paintings and sculptures."

The Memnonium is mentioned in the next line. Helen may tell us what she knows about it.

"The Memnonium was the temple-palace of Rhamses the Great. Its ruins show that it must have been a most beautiful specimen of architecture. There is in its grand hall a double row of pillars, crowned with capitals resembling the bell-shaped lotus flowers. These are very large and of solid stone, but the light and graceful shape of the flower is perfectly imitated. In the outer court, the fragments of an immense statue lie around its pedestal. Once it must have weighed nearly nine hundred tons; and the head was so large that although several millstones have been cut out of it, its size does not appear to have been lessened."

Emma may explain the next three lines.

"Time is here compared to a giant of such immense strength that he could throw down the magnificent palaces and temples that had been built with so much labor. But when the mummy was a living man, they were in all their splendor — Time had not even begun to destroy them."

I have, I think, gone sufficiently into detail. My account, I am obliged to confess, is extremely tame and unsatisfactory; but the recitations were felt to be spirited conversations, rather than wearisome alternations of question and answer. The records of ancient historians and the reports of modern travellers were carefully compared. There was an earnest endeavor to

ascertain the exact meaning of an author, and whether that meaning was in harmony with truth. Occasionally we were able to illustrate the lessons by pictures of people and places, and would have done this far more frequently had we been able to procure them. I remember that while studying an extract from one of Shakspeare's dramas, a member of the class brought a little book containing a series of beautiful views of Stratford-on-Avon, which excited us all, teacher and scholars, to perfect enthusiasm. I had fortunately once seen a model of the house where Shakspeare was born, and to my description of this, the chamber above, the winding stairs, the old-fashioned kitchen, they listened with delight. The pictures and the model made him far more like a living man to us. We saw the house where he lived, the river upon which he sailed, the church where he worshipped. Looking upon these, we felt as if we knew him, and studied the words which he wrote with increased and absorbing interest.

It is proper for me to say, as I conclude, that I have no desire that such a study of reading lessons should take the place of practice in elocution. I am aware that some time must be given to this alone; but the frequent or occasional study of reading lessons in this manner, will, I think, be attended with two advantages. Our pupils will read them far better, for they will have a more genial sympathy with the writer, and a more intelligent perception of his meaning. At the same time, they will form a habit which will be of indescribable benefit to them in after life — the habit of comparing different views and statements, of trying an author by the great eternal standard of Truth, and of earnestly questioning the Past, the Present, and the Future. A. A. H.

A TEACHER'S EVENING PRAYER.

"Jesus, Brother, and Consoler!
One before thee bends,
Worn and weary with her labors,
As the day descends:
May she on that arm be stayed,
Whose power the troubled seas obeyed!

Jesus, Brother, and Consoler!
Oft thy sleepless eyes,
In communion with the Father,
Saw the morning rise.
I am mortal; let me sleep
While their guard the angels keep.

Jesus, Brother, and Consoler!
Wakened by the sun,
May my soul in true submission
Say, 'Thy will be done,'
And the day be bright and clear,
As the night was dark and drear!

Jesus, Brother, and Consoler!
Crown me with thy meekness;
And the garment of thy strength
Fold around my weakness:
Sow thy good seed in my heart;
Let it there in freshness start.

Jesus, Brother, and Consoler!
May thy presence stay,
While thy little lambs I'm feeding
By my side each day!
While I lead them, lead thou me;
Draw us all still nearer thee."

LIFTING APPARATUS.

None of the youth of ten years in the public schools of Massachusetts, are ignorant of some of the uses of the lever; and almost every one has, at some time, witnessed the raising of stones and timber by means of ropes and pulleys. And certainly the habit of coasting, so prevalent during the winter season, has given to all the practical idea, or working, of the inclined plane. "The old oaken bucket that hangs in the well," they have many a time brought up, swimming full, by a tug at the wheel and axle. They have observed the splitting of rocks and the cleaving of wood by the wedge. They will laugh at the idea of driving a screw with the hammer. In

a word, they are all in a state to learn, and keenly to relish, something of the true mechanical philosophy.

But many of these schools in the country are still destitute of the apparatus with which to begin this work. The true teacher, however, can in a measure supply it. He can make his levers himself; then, laying his plan before his pupils, he will find no difficulty in procuring weights to use with them. For now a contribution will be levied upon every old catch-box in the district, and the old iron will be forthcoming; and the experiments may commence.

Taken for the closing general exercise, two or three days will suffice for the teacher to draw forth from his experiments a variety of facts, which he can group into formulæ for calculation. And the very crudity of his apparatus will give time for the more tardy intellects to comprehend more fully their fundamental principles; while no doubt will remain with himself, in regard to the interest which has been awakened by the mode in which his apparatus has been brought together.

In the application of these formulæ, his pupils will find the tables of weights and measures take meaning, and spring into life. The scales and the steelyard, the rule and the yard-stick, will assume in their hands talismanic power.

To make additions to his apparatus, the teacher will find to be an easy matter; and no very long time need elapse before he has fixed in the minds of his pupils just ideas of all the mechanical powers.

In unfolding next the law of falling bodies, or, in other words, the phenomena due to gravitation, a few ingenious experiments, made out of the school-room, will be found very advantageous; — for instance, noting the times in which a bullet falls from several different heights previously measured. Then, the delineation, upon the black-board, of a number of examples of the combination of the constant horizontal velocity with the accelerating velocity due to gravity, will be adequate to prepare the pupils to understand the true philosophy of projectiles; and enable them to follow their teacher in his development of the requisite formulæ for calculation. A stream of water, issuing from an aperture in the side of a vessel, will

afford one beautiful example for the application of these formulæ, and yield a visible testimony to the truths which may be reached by rightly interrogating nature.

Following these lessons with the consideration of circular motion, and the investigation and measure of the centrifugal force, the teacher will open to his pupils one of the richest fields of scientific research; and on all sides, in the machine-shop and the mill, at home and by the way, their attention will be drawn to a series of phenomena, begetting some of the most useful habits of investigation.

Passing from the terrestrial to the celestial phenomena, I would recommend to the teacher to commence with an explanation of sunrise; availing himself, in doing it, of a large drawing upon the black-board. And I would have the exercise begin a little before the appearance of the sun, on some splendidly clear morning. At the close of it, the singing together of some appropriate song, welcoming the "king of day," would leave a charming impression, both of the lesson and its accompaniments. The occasion would go down as an epoch, in the history of every pupil. The rising and setting of the moon and stars, and the diurnal motion of the heavens, could all be brought in as belonging to this lesson.

The phases of the moon and the tides, and some general notions of eclipses, would form a series of lessons not difficult of apprehension, but full of interest, and naturally following the former.

To these may properly succeed general lessons in meteorology; as on the formation of clouds, the deposition of dew, the fall of rain, snow and hail; the winds, the rainbow, and shooting stars, or fire-balls; thunder and lightning, and the aurora borealis.

Lessons upon the topics I have here enumerated, will be appropriate for any one of the seasons. But in the season of flowers, birds and insects, no doubt they should, in a similar way, come in for a share of attention in our course of public instruction.

I know it is frequently said that we attempt to impart too much instruction to those of a tender age. I believe it. And

I would by no means favor the idea of introducing these lessons, to the danger of diminishing in any degree the attention now given to the branches usually pursued in our public schools. I am persuaded that they should be taken up only as general exercises, and as side-views of the rich scenery in the midst of which we are all moving. And why not a game, if you please, in the application of mathematical and philosophical principles, as well as at marbles, or of chess?

Beginning with lessons on the simple mechanical powers, the young may be taught most effectually to employ their reasoning faculties, because they can find, for themselves, tests of the degree of accuracy they can attain by their use. This I consider a very important step in their intellectual life; and going to form a just and wholesome confidence, mingled with distrust, in the use of their own powers. "Come and let us reason together," is the divine voice which invites to the initiatory step into the higher moral and spiritual life. By a course of exercises, such as I have indicated, let the earnest teacher lead his pupils to a clear apprehension of some of the great laws of the physical world, as another utterance from the same being; and adding his own worthy example, wrought out through a living faith in him, — I hesitate not to say that he will be leading many into that higher life.

Every experienced educator knows that this kind of knowledge is peculiarly fitted to develop some of the most valuable characteristics in the minds of the young, and leads not indirectly to a thousand happy issues.

Who, with most appropriate feelings, beholds the opening of the day, and watches while its closing hours bring on the dusky eve and unveil the "heavenly host," — he who understands little or nothing of these movements? or he whose mind is imbued with a knowledge of those laws which show forth the greatness and power of the Creator? If in any case ignorance may have been the mother of devotion, least of all can it have been so here. And whatever may be the special pursuit of an individual, he cannot fail to derive, in various ways, signal benefits from an intimate acquaintance with the physical world. Rightly regarded, every thinking man admits it to be

an aid in drawing near that ever-present spirit, which "glows in the stars and blossoms in the trees," and seeks a dwelling in every human soul.

True, on commencing such a course of exercises as herein described, the teacher will occasionally find some discouragement. A parent may say, "My son is not to be a mechanic;" or, "My daughter will have no use for this kind of knowledge." But let him proceed with his plan; and, if he is judicious, that son or daughter will soon eloquently plead his cause, in disarming the old prejudices of the parent, and leading him to take higher views in respect to the whole subject of training the young.

We write no fiction. We speak from what we know, and testify concerning what we have seen. A teacher of the olden time, also, has recently related to me a very interesting case in her own experience.

During a four months' summer school, taught by her many years since, she was in the habit of giving out, daily, some four or five questions, on some subject of natural science, history, or biography. These questions were taken home by the pupils, and gave rise to frequent conversation with their parents, who, as well as their children, became intensely interested in the school. The consequence was, that in fifteen or sixteen weeks of the term, her pupils had learned nearly two hundred important facts, pertaining to the subjects just mentioned. The pupils, according to the intention of the teacher, took these exercises as recreations; and so far from interfering with the regular daily lessons of the school, they operated to increase a love of study, and thus to quicken the progress of the pupils in them.

It was the fashion in those days to "board around;" and in this case a number of the parents desiring at the same time the presence of the teacher in their families, vied with each other in offering the board at fifty cents per week.

Years have rolled by, and those parents are gone; but the men and the women of that beautiful valley still remember that summer school.

I hold it to be impossible for the youth, in any of our

schools, to go on in a dull way, when thus treated to a single daily exercise in some one of the departments before named. They will talk of these matters by the way, and at home; and parents will be questioned in respect to them. Ere they are aware, their interest will be excited, and they will come to coöperate with the teacher. The little differences and animosities which may have been long prevalent in the district, will begin to disappear, giving place to a spirit of union, and generating an internal heat sufficient to melt down the old apathy in respect to the glorious cause of human elevation.

It is a general complaint that parents lack interest in the education of their children. But if the teacher is thoroughly prepared for his work, he can gain some portion of the family table-talk, upon matters that must awaken interest. M. C.

MORAL LESSONS.

MANY teachers neglect to comply with our time-honored State law which requires express instruction in morals, as a part of every teacher's duties in the school-room. The neglect, however, is not in most cases intentional. It is not unfrequently caused by diffidence on the part of the individual as to his ability to give an effectual or impressive lesson on the vital subject of moral principle. To all instructors laboring under this conscious embarrassment, history, biography, and anecdote, in their wide open pages, offer freely their friendly and efficient aid.

If history has been justly termed "philosophy teaching by examples," it is surely moral rather than intellectual lessons that are meant to be involved in the definition. No instruction is so deep-felt, or so personal, as that which the young mind draws, for itself, from the contemplation of an impressive example. A few minutes' conversation daily with our pupils, on some one of the virtues which we would early implant in their hearts and cherish in their habits, — and this

conversation enlivened by the quotation of a bright example of the given virtue, — will be of more service in the formation of character, than the profoundest exposition of moral philosophy, or the most eloquent form of exhortation. — R. W.

A Hero in Humble Life.

[The following anecdote presents a most impressive example of the spirit of self-sacrifice, as inspiring the most determined courage.]

A deed of noble daring is recorded in the intelligence of the day as one of the events attendant on the destruction, by fire, of the Imperial Theatre at Moscow.

From the suddenness of this melancholy occurrence, and from the number of working-people permanently living with their families in the house, many lives were lost. Just at the commencement of the fire, three workmen, who had been engaged in the upper stories, finding no means to descend by the staircase, — so rapid was the progress of the flames, — jumped out of the windows to the lower roof, which, being of iron, soon became so intensely hot that two of the unfortunate beings, not capable of enduring the heat, threw themselves to the ground, and were killed by the fall. The third, with more presence of mind, made his way over protruding broad cornices to the front roof, and there remained for some minutes, till the greedy element, not content with the number of its victims, made its appearance close by him.

The poor man cried loudly for help. Ladders were procured, but they did not reach the height at which he stood. He saw it; and, raising his arms to heaven, he made the sign of the cross, and began to approach the edge of the precipice before him. In an instant more he would have been a corpse. Thousands of people stood all around, gazing with horror at the immense pile, upon which this poor man remained helpless and hopeless.

Silence, like that of the grave, reigned among the multitude. His fate seemed inevitable. Suddenly was heard a voice, "Stay a moment, my good fellow! Pray to God Almighty, and I 'll endeavor to save you!" — All eyes were turned to

the spot from which those sentences were uttered. A group of three men was observed, — common peasants; two of them holding, by the arms and shoulders, a third, who was struggling hard to break from the hold of his friends. "Let me go, my lads;" said he, "my heart is burning within me; I cannot bear the sight of a Christian soul thus perishing!" And, with a powerful effort, he broke loose, and darted forward.

The dense crowd gave way as he ran to the burning building, pulling from himself, and at the same time throwing away, his sheep-skin cloak and his hat. In an instant he was at the foot of the ladder; here he took off his boots, attached a rope round his waist, and seizing an oven-fork, which happened to lie close by, began to ascend the ladder, which did not reach, at the utmost, to two-thirds of the height at which stood the victim. Having attained the upper footstep, the generous man took hold of the rain-gutter. Apparently it was not a very safe means of ascent, as it bent and rattled under his weight. But the man was resolved; he made the sign of the cross, and began to climb up. A cloud of suffocating smoke whirled around him; the flames were fast approaching; burning timber, red-hot sheets of roofing iron were falling down from every side; — but what to him was all this? His heart was burning within his breast; he could not bear the sight of a Christian soul thus perishing.

It was a frosty day; the rain-gutter was as cold as ice; his warm, sweaty palms and fingers stick and freeze to the iron tube; he tears them off, leaving bloody marks at every hole, and ascends higher and higher, till he puts his foot on a projecting cornice. From thence, by means of the oven-fork, he handed the rope to the poor man above him. "Tie it fast to the hook which supports the gutter. That 's right. Now descend!" And he held the other end of the rope, and preceding the man, still supporting him down the gutter, placed him on the ladder. — The man was saved.

During all this time, the multitude stood breathless; but when they saw them both out of danger, all hats were taken off, and the sign of the cross, at every breast, testified a general thanksgiving, and a loud shout approved the act of gener-

osity. Every one pressed forward to see the hero of this scene. The first who approached him, an officer in the army, gave him twenty-five roubles of silver. The example was followed: noblemen, merchants, peasants, took out their purses; — some gave golden, some silver coin; some threw into his hat a few copper copecks: all gave what they could. "God bless you, noble friend!" was heard from every side.

The name of this generous man was Bazil Marrin, a native of the government of Taroslaff. Being a roofer by trade, he for many years lived at St. Petersburg, pursuing his vocation; but afterwards engaged himself as a boiler-maker at the Government foundry at Kolpino. Last year he took leave of absence, and visited his native village. Having spent a few months with his friends, he was returning to St. Petersburg, by way of Moscow, to avail himself of the railways. He came to the ancient capital the day before the fire; and, not having caught the train, was obliged to remain till the next day. As this was his first arrival in Moscow, he took the opportunity of seeing the Kremlin, the old fortress, and to visit its venerable cathedrals. There, from some passers-by, he heard of the fire, and hastened to the spot, where he so nobly distinguished himself.

At three o'clock in the afternoon of the same day, he took his seat in a railway carriage. On the 13th of the same month he reached St. Petersburg, and again enlisted himself in the number of workmen at Kolpino. In two days after, he was summoned to the office of the general police-master of the capital, where he was told that the Emperor desired to see him. He was accordingly taken to the palace. His Imperial Majesty received Marrin in his cabinet, and was pleased to say to him, when he entered, "I thank you for a good action. Embrace me, and relate how you did it." In simple words Marrin told his story; and, when he finished, the Emperor dismissed him, saying, "Now you may go; but in case of need, come to me at any time." Soon afterwards Marrin was rewarded with a medal and a sum of one hundred and fifty roubles of silver.

Setting a Prisoner Free.

[The incident related in the following paragraphs, is a beautiful and touching example of a generous compassion for the inferior orders of animal life.]

An escape from bondage, in these days, says the New York Tribune, thrills the public heart, and gives the pulse a quicker flow, particularly when the world learns that no man had any just right to deprive that prisoner of his liberty.

We witnessed an escape, — no, it was not an escape; it was a noble act of setting free one held under restraint. It took place on Saturday, upon one of our city ferry-boats, and gave the heart of more than one who witnessed it, a warmer glow of gratitude to God that the liberator had a heart "to feel for others' woes;" a heart in the right place, — where God intended man's heart should be, and not in his right-hand breeches-pocket.

A man on the boat had a cage full of little birds, (such as go warbling about the fields in spring, enjoying life and liberty, — but, unlike the Canary, *die* in captivity,) which he was trying to sell for a shilling apiece.

It is a cruel way to make money, — but why not seize upon birds, and put them behind the iron grates, and sell them, since man does the same thing to his fellow-man, and then calls him his slave?

"Going for a shilling!" said the man with the cage.

"Yes!" said a little blue-eyed boy at our side, "one *shall* go for a shilling;" and he searched his pockets for the coin, an only one, and walked up to the man and said:

"Sir, I will take one of your little birds. Give me one that can fly well."

"Yes, here is a fine one, full-fledged; you see his wings are perfect, and he is a strong, healthy bird; he will suit you exactly."

"Yes, that will do."

The bird-fancier twisted a bit of paper up so that his purchaser could carry him safely "without injuring a feather."

The boy marched away with his prize, and sat down to con-

template his purchase, as he undid one corner of the paper, and peeped in upon his little slave.

"Ah!" said we, mentally, "what a lonely life of imprisonment you are destined to. — Why did you not buy two, my boy?"

"I had no more money, or I would have bought the whole."

"What a young Turk!" we thought. How we wronged this noble boy! As the boat neared the shore, he got up and went out upon the guard, opened his paper, tossed the bird in the air, and simply said: "Go free, poor bird; I can't keep you."

What a happy bird — what a happier boy! How his eyes glistened — how a dozen men who witnessed the act, did think, What a noble boy! What a lesson that boy taught us! Reader, it may teach you something. Think upon it. This story has a moral — we need not tell you that. If you think, you will find it.

ON THE TEACHING OF GEOGRAPHY.

A FEW months since, I noticed an article in the "Teacher," entitled "An Experiment in Teaching Geography," which interested me exceedingly. I felt at once a sympathy with the writer, and envied him the power of making the study of Geography as attractive as I am sure it must have been made. Upon a second and very recent perusal of the same article, I find myself no less interested than at first, perhaps for the reason that since then, almost unconsciously to myself, I have felt its influence in my efforts to teach the same subject. It is true I have succeeded very imperfectly, yet, if I do not greatly mistake, my little ones have some knowledge of the physical features of the different countries, beyond "level or moderately uneven." But it is not my object, now, to notice anything which I have done, or attempted to do, in following the suggestions of the writer of the article to which I have

referred; but rather to give a brief account of an experiment which I made in the latter part of the autumn, in teaching a class of little girls, from eleven to thirteen years of age. They had been studying the geography of Africa, and, in addition to what was found in their text-book — which, I suspect, is not as profound as Mitchell's — I had endeavored to call attention to the contour of the country, its size, its mountain systems, its plains, and its river systems. But how could I be sure that I had succeeded in conveying an accurate idea of the physical features of the continent? for, when we hear a child, on the eve of leaving a Grammar School for a High School, inquiring, seriously, if Hartford is in New Haven, we must acknowledge that we are a little incredulous in regard to the accuracy of children's knowledge.

It seemed very desirable that they should draw a map of Africa, and draw it from memory, representing merely the coast-line, the principal mountains, and river systems. But I must confess to a shrinking from the attempt to teach them the principles of cartography. It seemed so difficult, to me, to adapt these principles to the comprehension of children; yet I believed it might be done, and, having once entered upon it, I became quite enthusiastic, and resolved to carry out my plans, if possible. In order to give them some correct idea of a map; that it might be the representation of something real to them; that they might see the necessity of drawing the parallels and meridians, and also that they might understand something of the scale of maps, I called upon them to assist me in making a map of our recitation-room. I had decided that it should be drawn by a scale of an inch to a foot. Having completed the outline, I called their attention to the manner in which we should locate the different objects in the room, and also to the necessity of a measurement from the two sides of the room, at right angles to each other, to enable us to fix the position of any point. Having secured this, I felt that I must give them some idea of the form of the earth, not by stating to them the fact, so incomprehensible to children, that it is "round, like an orange;" but by arranging a simple course of reasoning, to prove its spherical form, and

leaving them to deduce the conclusion, which they did. But, to assure myself that they had appreciated, in any manner, the train of reasoning I had pursued, and the illustrations connected with it, I required a written abstract of the subject, as I had presented it to them.

But the most difficult part of my work was yet untouched; that of giving them a correct idea of the nature and uses of the different circles used in representing a country, and the manner in which they may be projected upon a plane. It seemed necessary that they should have some concise, yet comprehensive definitions of circles. These I arranged, and required that they should be committed to memory; but, to make my explanations understood, I was obliged, not unfrequently, to have recourse to that most philosophical of all fruits, an apple. To assist in giving them an idea of the different projections, I procured a large paste-board circle, which, upon being presented to their view, would appear as a straight line, a circle, or an ellipse, according as the plane was situated with reference to the eye. The word ellipse was not introduced until the idea of an elliptical form was suggested by a member of the class, as I held the circle before her, in such a manner that I knew it ought to have that form.

After stating to them the fact of the earth's diurnal revolution, they could easily see, by noticing the rotations of a small globe, the necessity of conceiving of an axis, on which the earth should turn, and they could also notice the rapidity of motion at the equator, and the entire absence of motion at the poles. These standing-still points, as I termed them, we considered as our starting-points in drawing the meridians. I found it very difficult to obtain from them a correct definition of the equator. They would almost invariably commence, "The equator is a straight line," &c. At length, being tolerably satisfied with their understanding of the definitions I had given them, I wished them to imagine themselves as directly over the continent of Africa, and at such a distance in the heavens, that, could they view it at one glance, it would appear to them as small as they were about to represent it; I also tried to give them a definite idea of what is meant by

being directly over a country, which idea, it seemed to me, they caught very readily. They were now prepared for the comparative lengths of the degrees of latitude and longitude.

I selected only a few which I considered the most important, and which could be most easily remembered, for example, the comparative lengths of a degree at the equator, at 47½°, at 60°, at 70°, and at 75° of latitude. They were then required to learn the different parallels and meridians which would be needed in drawing the map of Africa, the appearance of the central meridian, and the equator; also, the latitude and longitude of the most prominent points on the coast, with the direction and form of the coast between these points. Having accomplished this, they drew their map. The inquiry very naturally arises, "Did they draw it correctly?" Not all of them. Some of them were quite successful, others tolerably so, and the few who almost invariably fail in everything would have done well to have labelled their map as the boy did the horse he drew.

In regard to the real success of the experiment, I may always remain in ignorance, as the class has now passed into other hands; but I have never regretted making it, and if I thought it desirable to have a class represent any country about which they had been studying, I should pursue essentially the same course again. S. P. C.

HOW TO TEACH THICK-HEADED BOYS.

"Understandest thou what thou readest?" "How can I, except one interpret to me?"

"A FEW years ago," says Mr. Stow, the author of the Training System, "I visited a school in one of the large towns of England, taught on the monitorial system, and was introduced to the master by one of the directors, who stated that he was a very superior teacher, and had his boys, to the number of at least three hundred and fifty, in good order. I found the school, as stated, in excellent order, all busy at spelling

lessons, or reading the Scriptures. On reaching the highest class, in company with the master and director, I asked the former if he ever questioned the scholars on what they read. He answered, 'No, sir; I have no time for that; but you may, if you please.' I answered, that except when personally known to the teacher, I never questioned children in any school. 'By all means do so now, if you please; but *them* thick-headed boys cannot understand a word, I am sure.'

Being asked to put a few questions, I proceeded. 'Boys, show me where you are reading;' and, to do them justice, they read fluently. The subject was the story of Eli and his two sons. I caused the whole of them to read again the first verse. '*And Eli had two sons, Hophni and Phinehas.*' 'Now, children, close your books.' Presuming it impossible that any error could be committed in so plain a narrative, I proceeded: 'Well, who was Eli?' *No answer.* This question appeared too high, requiring an exercise of thought, and a knowledge not to be found in the verse read. I, therefore, descended in the scale, and proceeded: 'Tell me how many sons Eli had.' '*Ugh?*' 'Had Eli any sons?' '*Soor.*' 'Open your books, if you please, and read again.' Three or four read in succession, '*And Eli had two sons, Hophni and Phinehas.*' 'Now, answer me, boys.' 'How many sons had Eli?' '*Soor.*' 'Had Eli any sons?' '*Ugh.*' 'Who do you think Eli was? Was he a man, do you think, or a bird, or a beast? What do you think Eli was, children?' '*Soor.*' 'Look at me, children, and answer me this: If Eli had two sons, do you think his two sons had a father?' '*Soor.*' 'Think, if you please; had Eli ANY sons?' *No answer.* 'Well, since you cannot tell me how many *sons* Eli had, how many *daughters*, think you, had he?' '*Three, soor.*' 'Where do you find that, children? Look at your Bibles. Who told you that Eli had three daughters?' '*Ugh.*' The director turned upon his heels, and the master said, 'Now, sir, *didn't I tell you them fellows could not understand a word?*'

We admit the principle, that no school or system ought to be judged of by a single exhibition, or after a transient inspection. But here there can be no mistake; for if the highest

class of a school, consisting of a dozen boys of ten to twelve years of age, who had read the Scriptures daily for years, could make such an appearance, what are we to conclude, but that, so far as their intellectual or moral culture was concerned, it mattered not whether the Scriptures they read had been printed in Hebrew or in their mother tongue. I thought this, at the time, an extreme case, but afterwards met with one or two similar results in other schools.

In the present instance, I still proceeded, however, piercing the tough unpulverized clod of their understanding, till, at the expiration of fifteen minutes, they were made to perceive that Eli was a man, that this man had two sons, and that the names of these two sons were Hophni and Phinehas.

That the fault here was not in the children, but in the master's system, was rendered apparent from the fact, that on the same day I visited another school in the immediate neighborhood, having the same sort of children, one hundred and forty in number, (boys and girls,) but taught on the Training System, in which was exhibited a minute acquaintance with scripture history, and an enlarged and minute knowledge of natural science. The whole was conducted by a first and second trained master, from the Glasgow Normal Seminary, well versed in its method of training."

[Walter Scott, in one of his tales, describes the teacher's occupation as that of "delving sand," or "washing Ethiopians." American teachers have reason to be thankful that they are so seldom called to such discouraging experience. Now and then, however, those of our number whose daily duties bring them in contact with the neglected children of some of our immigrant population, have a sufficient taste of the sort of employment to which Scott refers, to enable them to sympathize with their professional brethren and sisters abroad, and to appreciate the suggestive value of the anecdote from Mr. Stow, whose indefatigable persistence in the pursuit of teaching under phrenological difficulties on the part of the pupil, furnishes, certainly, one phase of the model teacher. R.]

DUDLEY LEAVITT, THE PIONEER TEACHER, FARMER, AND MAN OF SCIENCE.

The Rev. William Clark, Secretary of the New Hampshire Home Missionary Society, writing from Meredith Village to the editor of the N. H. *Congregational Journal*, gives the following interesting particulars of the life of the noble veteran mentioned above: —

"Many of your readers, Mr. Editor, will remember 'Leavitt's Almanack,' for many a year an indispensable article of household furniture in all the northern and eastern parts of the State. Its eccentric author, Dudley Leavitt, familiarly called 'Master Leavitt' by all the people in this region of the generation now passing off the stage, came to this town from Gilmanton, at an early period of its settlement, when most of the now well cultivated farms were covered with dense forests. In one of these he made his early home, built a humble house, with a chimney too small to contain an oven. This then *sine qua non* to a family's comfortable existence, he erected on a large pine stump, on which, for a foundation, he placed a flat stone. In this unique oven was transacted the baking for his family many years. His house had the humblest cabinet furniture, but was adorned on one of its sides with a library of rare and valuable works upon Mathematics and Philosophy, his favorite studies. For some of these he sent special orders to Europe, an unusual thing a half century ago with private individuals in humble life. A hard laboring man on his farm, all his leisure moments were consecrated to his library. To this he would often immediately resort on coming from the labors of the field or the woods, for aid in settling some questions connected with his favorite studies; so absorbed would he be in the investigation, that, unmindful of the wants of the outer man, it was somewhat of an enterprise for his good wife and daughter to get him seated at the family repasts. For many years he was wont to teach in the autumn in the district school-house a High School. His school, to be sure, had not that technic,

for this name is of comparatively recent origin. But his school *was a High School* in the best sense, and of the highest order. He was *master* of what he taught, and well did he meet the appellation familiarly given him, 'Master Leavitt.' His school was the resort of young men and women, not only in this then large town — some thirteen miles square — but from many of the towns of 'Old Strafford.' In it, and under his inspiring influence over them, their minds received a new impulse in the pursuit of knowledge; foundations for mental discipline and solid education were laid; the evidences of which have been the subsequent career, the valuable character, and usefulness of his numerous pupils. Many an Academy and High School of sounding name and large pretence, in our times, is doing less for the true interests of solid learning, and for the formation of useful character, than did the unpretending and unadvertised rural school of 'Master Leavitt.' His Almanack was first published in 1797, sixty years ago, and has been annually given to the public ever since. The number for the present year, published by J. F. Daniels, of Franklin in this State, owner of the copy-right, is sixty-one. I am told that he had calculated before his death, which occurred in 1852, the eclipses to occur during all the years of the present century, and prepared the calendars for the same. In other words, his annual Almanac for nearly half a century to come, is already substantially prepared, and will, no doubt, continue to be published to the end of the century. In 1899, 'Leavitt's old Farmer's Almanack' will be found hanging by the accustomed loop drawn through one corner, near the cooking apparatus in the kitchen of the good housewives of our Granite farmers as a necessary guide and aid in their appropriate and most honorable duties! Think of it, Mr. Editor, and let your readers think of it. An unpretending and comparatively obscure man — a scholar — farmer — furnishing that indispensable guide and directory to the business of life — an Almanac — to the successive generations of a *whole century*. Truly his name will live and his praises be sung when the name of many a man, now prominent before the world, but which has no solid foundation to rest upon, will have perished from record!"

ONE BY ONE.

ONE by one the sands are flowing,
One by one the moments fall;
Some are coming, some are going—
Do not strive to grasp them all.

One by one thy duties wait thee,
Let thy whole strength go to each;
Let no future dreams elate thee;
Learn thou first what these can teach.

One by one (bright gifts from Heaven)
Joys are sent thee here below;
Take them readily when given,
Ready, too, to let them go.

One by one the griefs shall meet thee,
Do not fear an armed band;
One will fade as others greet thee,
Shadows passing through the land.

Do not laugh at life's long sorrow;
See how small each moment's pain;
God will help thee for to-morrow;
Every day begin again.

Every hour that fleets so slowly
Has its task to do or bear;
Luminous the crown, and holy,
If thou set each gem with care.

Do not linger with regretting,
Or for passion hours despond;
Nor, the daily toil forgetting,
Look too eagerly beyond.

Hours are golden links, God's token,
Reaching Heaven; but one by one
Take them, lest the chain be broken
Ere the pilgrimage be done. *Dickens*

Resident Editor's Department.

PUBLIC EDUCATION IN MASSACHUSETTS.

The last annual report of the Board of Education, with its accompanying documents, shows that our free schools are in a state of unexampled prosperity. The large amount of money raised for educational purposes, and the encouragement offered to all classes for availing themselves of its advantages, have produced results highly creditable to our State and country. There is no boy in the Commonwealth, provided he possesses a moderate amount of talent, who cannot obtain the best intellectual privileges afforded by our American Colleges. There is no young lady, no matter of what situation in life, who cannot acquire an education which will place her on a level, as far as intellectual discipline is concerned, with the highest and most accomplished of her sex. The only condition requisite for attaining such positions rests wholly on mental effort and persevering application. Our schools are emphatically institutions for the people. The State, in the distribution of its funds, recognizes no social caste nor privileged order, but impartially dispenses its benefits to the lowest as well as to the highest members of society. This principle is in accordance with the spirit of our Government in all other matters of legislation.

As the State Report is not accessible to most of our readers, we propose to present such selections from it as will give a general idea of our system of public instruction.

Under the immediate patronage of the State are the Teachers' Institutes, Normal Schools, and State Scholarships; while the High, Grammar, Intermediate, and Primary Schools, are supported generally by direct taxation. The income of the School Fund for the year ending June, 1856, was $90,566.30, which in part was applied to the support of the former class of educational institutions. The amount of money raised directly by the people was $1,213,953.55, being an increase on the preceding year of $76,545.79.

The extracts which follow are taken mainly from the Report of the Secretary, Hon. George S. Boutwell.

Teachers' Institutes.

Teachers' Institutes were held, during the year 1856, in the following towns, viz.: Ware, Winchendon, Dennis, Kingston, Marlborough, Sterling, Stockbridge, Groton, Barnstable,* and Williamsburg. Eleven hundred and twelve persons, or an average of one hundred and eleven, were registered or numbered as members of the several Institutes. After

* Village of Hyannis.

making allowance for the pupils of the Normal Schools who were present in 1855 and in 1856, the attendance has been substantially the same in both years. Of those who attended the Institutes this year, five hundred and five are known to have attended in former years; and of the whole number of members, six hundred and twenty-four are known to have been actually engaged in the business of teaching. Among the latter were teachers of high attainments and great experience. This simple division is a happy commentary upon the character of the Institutes. It shows that they are important aids, even to experienced teachers, as many such are always in attendance, and that the young who are about to enter the profession look to the Institute as one means of preparation. Some teachers attend not only twice, but even three, four, five and six times. The Institutes are not of equal value to all; the exercises and instructions are not alike new to every one; but as a general statement it may be said that an entire session will furnish something of value to the most accomplished teacher. Some will get positive knowledge, some will get suggestions which lead their own minds to important results, while others may find their courage strengthened, their faith quickened, or their ability to govern and teach increased by the experience and practice of those with whom they associate.

The character of the Institutes is substantially the same that it has been in former years; though the details of the exercises have in some respects been changed. The following teachers have been employed for the current year: Professors William Russell, Alpheus Crosby, and Hermann Krüsi, Messrs. Lowell Mason and Sanborn Tenney, and Rev. A. R. Pope.

The time heretofore assigned to teaching exercises in drawing, has been diminished about one-half, and one or two practical lectures have been given at each Institute by Rev. A. R. Pope, upon subjects of primary importance to the schools, as proper methods of heating and ventilating school-rooms, the posture of pupils, exercise, and other topics of a kindred nature. At several of the sessions attention has been given to the theory of teaching, and to the discipline of schools with special reference to the use of moral means in government.

The Institute is not only a valuable help to teachers, whether experienced or inexperienced, but it has become a most important means of influencing the public at large. During the past year the evening sessions have been attended by the citizens generally, and resort has been had, in most of the towns, to the largest hall, or place of public meeting, to be found in the vicinity.

These Institutes have been held at an expense of $350 each, making an aggregate of $3,500. In the judgment of the Board, this is a judicious expenditure of money.

State Scholarships.

Of the State Scholarships thirty-six are now filled, and the remaining twelve will be as soon as the law will allow. Sufficient time has not yet

elapsed for the formation of a practical judgment on this part of the system. The sum of $2,500 was paid last year on this account.

Normal Schools.

The Normal Schools are the growth of the last twenty years, and the natural result of a general interest in public education. They are in their true uses and relations, training schools, preparatory schools, or professional schools for teachers. The idea to which they owe their existence does not degrade the vocation, but is calculated to elevate teaching to the highest rank of human pursuits. If the judicious and thorough education of a child is a matter of great importance and considerable difficulty, then the qualifications of an enlightened and skilful teacher are not easily attained, and ought not to be undervalued. Other institutions furnish good teachers; some persons are so by nature, independently of all institutions; but it is not safe to trust the character of four thousand schools, and the destiny of two hundred thousand pupils to good fortune or to chance. The State, therefore, has, with great wisdom, founded four Normal Schools, that ought to educate two hundred teachers annually. This number may seem too small to exert any important influence, should all prove successful in their calling; while some, it must be confessed, are incompetent or ill adapted to the work. The number of these, however, is small, while the effect of a Normal course is, in every case, beneficial.

For the past year the appropriation for the Normal Schools has been		$13,000 00
Of this there has been appropriated to the School at Westfield, ...	$3,200 00	
To the School at Framingham, . .	3,200 00	
To the School at Bridgewater, . .	3,100 00	
To the School at Salem, . . .	3,300 00	
		$12,800 00

This leaves $200 free for general purposes.

The School Fund.

The Massachusetts School Fund and the financial condition of the educational department, deserve consideration. By a statute of 1834, chapter 169, it was provided that from and after the first day of January, 1835, all moneys in the treasury derived from the sale of lands in the State of Maine, and from the claim of the State on the Government of the United States for military services, and not otherwise appropriated, together with fifty per centum of all moneys thereafter to be received from the sale of lands in Maine, should be appropriated to constitute a permanent fund for the aid and encouragement of common schools; it being provided that said fund should never exceed one million of dollars. It was also declared that the income only of said fund should be appropriated to the aid and encouragement of common schools.

The statute of 1851, chapter 112, allowed the fund to accumulate until it should amount to a million and five hundred thousand dollars; and by a statute of 1854, chapter 300, the intention of the legislature of 1851 was actually consummated by a grant of authority to the treasurer of the Commonwealth to transfer to the School Fund such a number of shares held by the Commonwealth in the Western Railroad Corporation, as would, at the rate of one hundred dollars a share, increase the principal of said fund to the amount of one million and five hundred thousand dollars.

But the statute of 1854 made an important change in the disposition of the income of the fund. By a previous law (statute 1846, chapter 219,) the entire annual income of the fund was distributed among the cities and towns for the direct "aid and encouragement of common schools," while the appropriations for general educational purposes were made a charge upon the moiety of the proceeds of the sales of the public lands, and in case that resource in any year proved insufficient, the deficiency was to be met by a payment from the school fund already invested. The Acts of 1834 and 1846 contemplated the establishment of a fund of a million of dollars, the entire income of which should be distributed among the towns and cities in aid of their schools. The law of 1854 made a change in this respect, though it looked to the accomplishment, ultimately, of the same result. By the last named Act, *one-half* of the income of the fund was to be apportioned and distributed for the use and support of common schools, in the manner then provided by law for the apportionment and distribution of the *whole* income of the fund; and all appropriations for general educational purposes, unless otherwise specially provided for by law, were to be chargeable to and paid from the other half of the annual income of said fund. And in case this half of the annual income should in any year exceed the sums drawn from the treasury for general educational purposes in such year, the surplus was to be carried to the account of the principal of said fund, and added thereto, until said principal should amount to the sum of two millions of dollars.

The maximum amount of the school fund, two millions of dollars, only furnishes the means of aiding and encouraging the common schools contemplated by the law of 1834, which limited the fund itself to one million of dollars.

The sum now distributed is equal to about twenty cents for each person between the ages of five and fifteen years, and it is not likely ever to be greater, as the population of the State will increase at a ratio corresponding with the accumulation of the fund.

On the first day of June, 1856, the principal of the fund was $1,627,467.28, and the income for the preceding year was $90,566.30.

If it be assumed that the income for the current year will amount to $92,000, then there will be set aside for general educational expenses, and for the increase of the principal of the fund, the sum of $46,000. The appropriations and expenditures chargeable to this account under existing laws, amount to $37,500; leaving a remainder of $8,500 to be carried to the capital of the school fund. But in this statement no provision is made

for the annual payment of twelve hundred dollars additional, that will be due on account of State Scholarships, in 1858; or for the Normal training of the graduates of the colleges, as stipulated in the Act of 1853, chap. 193; or for the re-establishment of the agencies; or for more ample provision for the permanent support of the Normal Schools; or for an occasional charge on account of libraries, apparatus, or buildings provided for the benefit of these institutions. In any view of the case, the surplus to be annually carried to the principal of the fund cannot exceed ten thousand, and may fall below five thousand dollars. And, indeed, unless the legislature shall decline all applications for money, to be drawn from the school fund, by institutions that are private in their foundation, though they may be public in their uses, the time is far distant when the fund will amount to two millions of dollars, and when there shall be the income of one million of dollars to be distributed among the cities and towns for the "aid and encouragement of common schools," as contemplated by the statute of 1834.

The school fund was not established for the support of the schools, but for their "aid and encouragement," hence it would not be wise, did the means exist, to distribute a sum so large as to relieve the towns in any considerable degree. In fact, the existence of the fund has added to the appropriations voluntarily made by the people. Each town through its committee, is required to make a detailed report of the condition of its schools, and also to furnish the information on which the tables, annually prepared in the office of the Board of Education, are based. If the information is withheld, the town loses its share of the income of the school fund. These tables, and the extracts from the reports of the committees, present results that are of incalculable value to the cause of education. Each town is made acquainted with the systems of other towns, and with its own relative standing in the Commonwealth. Its appropriations, according to population and property, are carefully considered, and a known low position is often a reason for greater liberality. As a result, we are able to obtain each year a large quantity of statistical information, having the essential requisites of accuracy and completeness, which is valuable in itself, but yet more valuable from its stimulating influence upon the people as members of the various municipalities. It may also be stated with propriety that the statistics have been improving in accuracy and completeness since 1837, when, confessedly, they were somewhat defective in these respects.

Private and Public Schools Compared.

Since 1837 the number of academies and private schools has diminished from 854 to 771, and the number of scholars in them from 27,266 to 23,617, while the cost of tuition has increased $51,347.53. There have been two years, however, 1854 and 1855, when the number of academies and private schools was less than it is at present; and the explanation of this fact seems to depend on several causes. There are many private schools, and the number has, I think, increased during the last three years, that are chiefly supported by pupils from other States. To this there is no objection; it is a

circumstance honorable to our teachers and to the character of the State. But it ought not to be concealed that private schools have sprung up in some towns from other causes. It has happened in a few instances that a small number of citizens have labored for one, two, or three years to improve the schools in their town or neighborhood, and finding their efforts ineffectual, or at best not attended by results answering to their desires, they have established schools upon a private foundation. This is to be lamented, but the general fact remains, that the influence of private schools is much less in proportion to the population of the State than it was twenty years ago. But much work yet remains to be done. There are important classes who do not entertain those elevated ideas of education which will lead them to engage heartily in whatever is calculated to promote it. Such are comparatively indifferent to the system, and especially are they inclined to leave everything appertaining to the schools in the condition the least troublesome to themselves. Such assent readily to the ordinary appropriations, but they resist, or accept with reluctance, any increase in the expenditure of money and any change in modes of education. When in a town this inertness becomes a successful barrier to the movements of the more enthusiastic, the latter are sometimes induced to turn away from the public system, and provide other means for the education of their children. This is a great evil, and can be remedied in one way only. It will not do to ask the parent, anxious for the education of his children, to keep them in the public schools, when the schools are not what they ought to be, and thus waste their time, and mar their prospects in the world. Intelligent, judicious, faithful parents will secure the education of their children if possible, and it is the duty of the public to furnish such means as are fitted to qualify young men and women for the business of life. If, then, the parent asks only this, his is a reasonable request, and the public should grant it. This, however, is not always done; and the irresistible inference is, that the educational movement of the last twenty years has given to a portion of the people ideas of what a school should be, that are not answered by the opinions of others, who in some cases constitute a majority of the voters in a town or district. What, under such circumstances, is to be done? Approach this inert public sentiment, and in a spirit of kindness, animate, invigorate, quicken it in the work of reform. Lead men to feel that they and theirs are interested in having an elevated and constantly improving system of public education, that shall meet the wants of the era on which the country now enters.

All should be convinced, if possible, that public schools, except for strictly professional culture, are at once more beneficial and economical. When the public school, whether it be the district, primary, grammar, or high school, is what it ought to be, it at once unites in its support the entire social, moral, political, and pecuniary power of the neighborhood or town. Now, allowing the instruction to be equal, what private institution can, under such circumstances, compete with the public school? Private or select schools do not thrive, except such as are professional in their character, or amply endowed, where the public schools are what they ought every where to be.

And where such public schools exist, they furnish better education, within the limits occupied, than can be furnished by any private school.

In public schools, where the system of gradation exists, and transfers are made from the lower to the higher departments upon the merits and attainments of pupils only, nothing further in the matter of classification can be desired. It is practicable to put together pupils of similar attainments and powers, and whenever an individual falls behind, the class is at once relieved of his presence, and he drops down until he finds his level. In private schools little or nothing of this kind can be done. Candidates are not subjected to a thorough examination, and a school of fifty pupils will usually furnish scholars suited to two, if not to three, of the great departments of our public system. In the public schools, position is the result of merit, hence every pupil is put upon his own resources; while under the private system it is possible for idleness and mediocrity to maintain a respectable position in the estimation of the world.

And private schools, which do the work that ought to be done in the public schools, increase the cost of education. The latter, in every instance, are to be maintained, whether all the children are taught in them or not. It is apparent that a town of two, four, or six thousand inhabitants can educate its children cheaper when it employs but one system, than it can when it employs two. This, then, may be assumed as a general truth: That the existence of private schools to do the work ordinarily done in the public schools, is strong evidence that the latter are not what they ought to be. I say *strong* evidence, for it is not conclusive. There are persons who believe that the moral and intellectual welfare of their children will be promoted by the tuition and society found in private or select schools. It may be so occasionally, but not generally. One objection to private schools is that they contain the exceptional characters of childhood and youth. They do not present the world as it actually is. Hence the graduate is not fitted for the business of life, because he is as yet in a great degree ignorant of the social elements that surround him.

The power of the parent to seclude his child from the world is limited by the term of the child's minority. When that is passed, he enters upon life, and is at once, without any practical culture, brought into contact with the characters found in the public schools; for, labor as men may, the public schools will give character to society, and determine what the associations of every individual are to be. In this age, the world is neither reformed, improved, nor governed by the education of the cloister. With this view of schools, and education, and life, two practical errors are to be combated, and, if possible, removed. First, the error that resists appropriations for convenient school-houses, suitable apparatus, and competent teachers, and which is in itself both the fact and the evidence of a public sentiment, tempered to furnish an education suited to the last generation, rather than to this; and secondly, we are to guard against the error, less general, but equally pernicious, that induces men to abandon the public system, because it does not, in all respects, meet their own ideas. This argument does not, however,

tend to show that private schools are unnecessary. Far from it. Their necessity and importance are conceded; but the claim is that the public system can furnish the education needed by all citizens, without reference to their calling; that the education given is both more thorough and more economical; and, therefore, it is a duty to make it universal, through the public schools.

Experiments in Electricity. — The excitement of electricity by secondary currents was discovered not many years ago by Professor Faraday. Lately a large apparatus constructed on that principle, of which the small medical coil is an application, was built by M. Ruhmkorff, of Paris. Soon after, the machine was so much improved by Mr. Hearder, of Plymouth, England, as to astonish Faraday himself. In this improvement of the induction coil, the thick wire through which the voltaic current is transmitted is wound round a hollow wooden core, about ten inches long, and over this is placed a gutta-percha tube, upon which there is wound about three miles of fine copper wire, about the thickness of sewing-silk, well insulated by silk and varnish. To this apparatus is applied a spring armature, that automatically breaks and makes contacts upward of a thousand times in a second; and at each break of contact through the primary wire, a current of electricity is induced in the long coil of this wire. Mr. Hearder has ascertained that a battery of twelve cells acting through this machine develops as much electricity as 800 plate electrical machines, each two feet in diameter, and kept in brisk action. It is also a peculiarity of this machine that by varying the thickness and length of the wire for the purpose, it may be made to produce electricity in a form of great intensity, so as to give powerful shocks, or in large quantity so as to fuse metals.

The Boomerang. — Mr. Resident Editor: Please to inform "A," the surmiser in the last number, as to the similarity of the Boomerang and Gyroscope in their mode of action, that if he will read in the Smithsonian Report for 1856, the admirable lecture of Prof. Snell, on Planetary Motion in general and the Rotascope in particular, he will find that this similarity was pointed out 20 years ago, long before the Gyroscope received its present form, name, and notoriety. He will there learn, too, how, by practice with a more harmless instrument, he may learn to use his Boomerang with safety, and thereby, perhaps, become the founder of a new system of highway robbery much more effective than the *garotte*. E. P. B.

Longevity of Students. — It is a popular error to suppose that scholars and literary men are shorter lived than other men. Hardly an eminent author of modern times but affords an example of longevity. Byron and Keats, it is true, died young — the latter by consumption, the former by irregularities that would have killed anybody. But Wordsworth, Southey, Tom Moore, and James Montgomery lived to an advanced age. Rogers at his decease was above ninety, and DeQuincey, Walter Savage Landor, and Humboldt, are still alive and at work, at past three score and ten. Our own

country furnishes similar examples in Benton, Silliman, Irving, Halleck and Pierpont; all old men, but still strong in health and mental vigor. The truth is, men oftener rust out than wear out; and there is no doubt that habitual mental employment tends to keep the body young.

A NEW FORMULA. — A young engineer, just beginning the practice of his profession, asked one of our most accomplished men of science for a *formula*, by which a "*down grade*" upon a railroad might always be described or expressed. The obliging savant at once tore a leaf from his tablets and wrote: —

109 *Norfolk last summer.*

The young man thanked him and left, but was not able to understand the expression, and has sent it to me to develop its functions. This I have done, as below, and the reduction may be useful to some of your readers: —

(1.) 109 *Norfolk last summer.*

Substituting the more general expression, we have —

(2.) 109 *sick city.*

Dividing the last element into its factors, we obtain —

(3.) 109 × 6 *ity or* (109 × 6) *ity.*

Performing the multiplication,

(4.) 654 *ity.*

Expressing this in Roman numerals, we have —

(5.) DCLIVity.

Giving the D its true value, and reducing the rest to "lower case," we have —

(6.) De-cliv-ity = down grade —

a more popular expression, although not so easily remembered as the elegant one furnished by the distinguished man of science. — *Boston Daily Advertiser.*

A "FONT" OF TYPE.—As a scrap of information with which few of our readers are acquainted we give the proportions in which the different letters are cast to a "font" of type, and in which they occur in print:

Letter *e*, 1200; *t*, 900; *a*, 850; *n*, *o*, *s*, *i*, 800: *h*, 640; *r*, 620; *d*, 440; *l*, 400; *u*, 340; *c*, *m*, 300; *f*, 250; *w*, *y*, 200; *g*, *p*, 170; *v*, 120; *k*, 80; *q*, 50; *j*, *x*, 40; *z*, 20.

Besides these there are the combined letters *fi*, 50; *ff*, 40; *fl*, 20; *ffi*, 15; *ffl*, 10; *æ*, 10; *œ*, 6. This refers to the small letters only, leaving out points, capitals, figures, spaces, and accents. The proportion of capitals and small capitals differs from that of the small letters. In those, I takes the first place, then T, then A, then E, &c. — *Student and Schoolmate.*

HIDDEN IN A NAPKIN. — An English nobleman once sent his stupid son to Rowland Hill, in order that he might be educated, accompanied with a note in which the father said of his hopeful son, "I am confident he has talents, but they are hidden in a napkin." The eccentric, but shrewd divine, kept the youth a few weeks under his care, and then sent him back to his father with the following laconic message: "I have shaken the napkin at all corners, and found nothing in it."

The Dollar Mark [$]. — Writers are not agreed as to the derivation of this sign to represent dollars. Some say that it comes from the letters U. S., which, after the adoption of the Federal Constitution, were prefixed to the Federal currency, and which afterwards, in the hurry of writing, were run into one another, — the U being made first, and the S over it. Others say that it is derived from the contraction of the Spanish word *pesos*, "dollars;" others, from the Spanish *fuertes*, "hard," to distinguish silver from paper money. The more probable explanation is, that it is a modification of the figure 8, and denotes a piece of eight *reals*, or, as the dollar was formerly called, *a piece of eight*. It was then designated by the figures $\frac{8}{8}$. — *Dictionary of Americanisms.*

Imagination during Sleep. — Sir Benjamin Brodie reasons thus: "In sleep there is an absence of volition. If it be not wholly suspended, it is because the sleep is imperfect. The phantoms of the imagination are never stationary. They succeed each other with such rapidity that they never can be made the subject of contemplation; and very often there is no connection (that is, none that we can trace) between that which comes first and that which follows. That there really are certain laws which regulate their production, I do not doubt, as there are laws which regulate all the phenomena; but, whatever these laws may be, we know little, and generally nothing, of them."

Decision and Truth. — Whatever you think proper to grant a child, let it be granted at the first word, without entreaty or prayer, and, above all, *without making any conditions*. Grant with pleasure, refuse with reluctance; but let your refusal be irrevocable, — let not importunity shake your resolution, let the positive "No," when once pronounced, be a wall of brass, which a child, after he has tried his strength against it half a dozen times, shall never more endeavor to shake. — *Selected.*

Emulation. — The principle of emulation is carried much too far in modern education. Many men are absolutely killed by it at the universities, and many more injure their constitutions irreparably. The habit to be encouraged is that of placid diligence. What is thus healthily acquired is retained, whereas the cramming system hurts the digestion. — *Southey's Letters.*

A Good Sentiment. — I abhor the spirit of ridicule. I despise it, because it is the usual resource of the shallow and base mind; and when wielded by the strongest hand with the purest intentions, an inefficient means of good. The spirit of satire, reversing the spirit of mercy, which is twice blessed, seems to me twice accursed; — evil in those who indulge it — evil to those who are the objects of it. — *Mrs. Jameson.*

The Object of Education. — The true object of education is to give children resources that will endure as long as life endures; habits that time will ameliorate, not destroy; occupation that will render sickness tolerable, solitude pleasant, age venerable; life more dignified and useful, and death less terrible. — *Sidney Smith.*

MATHEMATICAL QUESTIONS.

QUESTION 14.

A engages B and C to build a wall 100 rods long for $100, and they are to work separately. The average price per rod, therefore, is one dollar. But B's portion being more difficult to construct than A's, it is agreed that he shall have 9 ninepences and A 7 ninepences per rod. How many rods must each build, in order that he may receive $50? E. P. B.

QUESTION 15.

Solve the equations $x^2 - y^2 = 5$, and $x^3 y + xy^3 = 78$. E. F., jr.

QUESTION 16.

To draw a circle tangent to the two sides of an angle, and whose circumference shall pass through a given point between those sides. R. E.

QUESTION 17.

A cylindrical tube 50 inches long is half filled with mercury and then inverted in mercury. How high will the mercury stand, when that in the barometer stands at the height of 30 inches? T. S.

QUESTION 18.

A cistern, kept constantly filled with water to the height of 8 feet, has in the bottom a circular orifice 4 inches in diameter, in which is inserted a vertical tube 4 feet in length, every transverse section of which is a circle. What must be the internal diameter of the lower extremity, and what the form of the tube, in order that it may be completely filled while water is flowing through it, no allowance being made for friction, force producing lateral motion of the particles, or other obstacle to the vertical descent of the liquid? T. S.

QUESTION 19.

A press is to be worked by a given power, applied to a toggle-joint, and acting at right angles to the line joining the remote extremities of the two arms and at the junction of these arms. The distance of these extremities being given, also the distance of the point to which the power is applied from the line joining them, what must be the *relative* length of the arms, in order that the power shall move the greatest weight? T. S.

QUESTION 20.

Given: A pole 60 feet high, 40 inches in diameter at the bottom, and tapering uniformly to a point at the top. Required: The length of a line passing from the bottom to the top spirally, so as to complete the circumference of the pole once in every three feet. Also, a general formula for finding the same. P.

Of course the particular answers will differ, according as the distance, 3 feet, is taken upon the axis of the cone or upon the slant-height. ED.

ANSWER TO QUESTION 3.

The answer to this question is, that the afternoon begins at 12 mean time and ends at sunset. The shortest afternoon occurs when the decrease in the equation of time lengthens the afternoon, as much as the increase of the sun's declination shortens it. At the equator, it occurs in November, when the equation of time is the greatest, since there the sun *always* sets at 6 h.

G. B. V.

ANSWER TO QUESTION 3.

It is well known that the solars days, that is, the days reckoned from noon to noon by the sun, are unequal. They are longest in our winter, and shortest in our summer. The clocks in common use are intended to go uniformly, or, in other words, to keep mean time, which, at one period of the year, differs from solar time 16m. 17s. This is the maximum difference, and occurs about the 3d of November, at which period the true clock is thus much slower than the sun. From this time the difference diminishes, so that, about the 6th of December, it is only 8m. 55s. But, in the mean time, the length of the day in north latitude has diminished, so that, subtracting the equation of time from half the length of the day, gives, in our latitude, about 4h. 28m. for the length of the afternoon, which is the shortest in the year. At Washington and Charleston, the shortest afternoon occurs at nearly the same time as at Boston, at New Orleans about the 1st of December, and at the equator about the 3d of November.

T. S.

SOLUTION OF QUESTION 11.

(1), $x+y=10$.

(2), $x\sqrt{y}=12$. Multiply (1) by y and (2) by $\sqrt{y}$,

(3), $xy+y^2=10y$.

(4), $xy=12\sqrt{y}$; Subtract (4) from (3),

$y^2=10y-12\sqrt{y}$; transpose $6y$,

$y^2-6y=4y-12\sqrt{y}$; completing the squares by adding 9 to each member,

$y^2-6y+9=4y-12\sqrt{y}+9$; extracting the 2d root of each,

$y-3=2\sqrt{y}-3 \therefore y=2\sqrt{y}$, $\sqrt{y}=2$, $y=4$.

Hence from (1), $x=6$.

H. B.

Solved in nearly the same manner by N. C.

SOLUTION 2D.

(1), $x+y=10$.

(2), $x\sqrt{y}=12$. Multiplying (1) by x^2, squaring (2), and from the results deducing two values of x^2y, we obtain

$10x^2-x^3=144$; subtracting $4x^2$ from each member,

$6x^2-x^3=144-4x^2$, or

$x^2(6-x)=4(36-x^2)=4(6-x)(6+x)$; dividing by $6-x$, and transposing,

$x^2-4x=24 \therefore x=2\pm\sqrt{28}=2\pm2\sqrt{7}$. Hence from (1)

$y=8\mp2\sqrt{7}$.

M. M. L.

Solved in a manner nearly analogous with respect to y, by B. D. N.

SOLUTION 3D.

(1) $x+y=10$.

(2) $x\sqrt{y}=12$. Squaring (2), finding the value of y, and substituting in (1),

$x+\frac{144}{x^2}=10$; removing the denominator, multiplying by x, and transposing,

$x^4-10x^3+144x=0$; changing the form,

$(x^2-5x)^2-25x^2+144x=0$; adding x^2-24x to each member,

$(x^2-5x)^2-24x^2+120x=x^2-24x$; changing the form,

$(x^2-5x)^2-24(x^2-5x)=x^2-24x$; adding to each member 144,

$(x^2-5x)^2-24(x^2-5x)+144=x^2-24x+144$; extracting the 2d root,

$x^2-5x-12=x-12$ $\therefore$ $x^2=6x$, $x=6$ $\therefore$ $y=4$.

J. S. E.

The solutions given above are correct so far as they go, but neither of them gives all the values of the unknown quantities. In the second solution, the factor $x-6$, which is struck out, might have been put $=0$, which would have given $x=6$. In solution third, if the denominator of the 3d equation be removed, and all the terms be placed in the 1st member, the equation may be divided by $x-6$, that is, by the unknown quantity diminished by its value already found, the quotient put equal to zero, would give $x=2\pm2\sqrt{7}$. Another correspondent who gives one of the answers correctly, strikes out the factor $(\sqrt{y}-2)$, which being made equal to zero, would give $y=4$.

The answers are $x=6$, $y=4$; $x=2+2\sqrt{7}$, $y=8-2\sqrt{7}$; or $x=2-2\sqrt{7}$, $y=8+2\sqrt{7}$. ED.

The following solutions, although others have been given to the same questions, are considered quite valuable and are, therefore, inserted.

SOLUTION OF QUESTION 10TH.

$$x^2-\frac{2}{x}=3, \text{ or } x^3-3x=2.$$

Assume $x=y-1$. Then $x^3-3x-2=y^3-3y^2=0$.

$$y^2-3y=0 \quad \therefore \quad y=\frac{3}{2}\pm\sqrt{\tfrac{9}{4}}=3, \text{ or } y=0.$$

Hence $x=2$ or -1. N. A. P. and G. W. P.

SOLUTION OF QUESTION 11, IN THE NUMBER FOR JULY, 1856.

Let x_{q-1} represent the sum which the $(q-1)$th son receives, and y the remainder of the estate left after the $(q-2)$th son had taken his share.

Then, by the conditions of the question,

$$x_{q-1}=a(q-1)+\frac{y-a(q-1)}{n} \text{ and}$$

$$x_q=aq+\frac{y-x_{q-1}-aq}{n}.$$

Eliminating y, we have

$$x_{q-1}=\frac{n}{n-1}x_q-a=\frac{n}{(n-1)}[x_q-(n-1)a]+(n-1)a.$$

In like manner,

$$x_{q-2} = \frac{n}{n-1}\, x_{q-1} - a = \frac{n^2}{(n-1)^2}\,[x_q - (n-1)\,a] + (n-1)\,a \quad \therefore$$

$$x_{q-r} = \left(\frac{n}{n-1}\right)^r\,[x_q - (n-1)\,a] + (n-1)\,a;\ \text{and since } x_m = ma$$

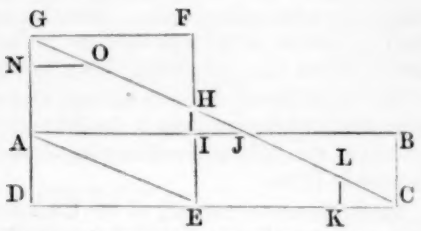
$$x_p = a\left(\frac{n}{n-1}\right)^{m-p}\,(m-n+1) + (n-1)\,a. \quad \text{Ans.}$$

Corollary. If $m = n-1$, the shares are all equal, and the whole fortune is m^2a. G. B. V.

Remark. — In the preceding solution, r is any positive whole number less than q, and m is the whole number of sons. It is also manifest that from the share of any son we may find that of the preceding, by subtracting $(n-1)\,a$ from the latter, multiplying the remainder by $\frac{n}{n-1}$ and adding $(n-1)\,a$ to the product, and that we may pass from the share of any son to that of the succeeding by dividing, instead of multiplying. Ed.

SOLUTION OF QUESTION 6.

Let A B C D be the board, and G D E F the equivalent square. Now A D : D E = D G or D E : D C. Hence the lines A E and G C are parallel, and all the triangles of the figure are similar. But E C = A J, and K C = I J by construction; therefore the following triangles are equal, viz.: L K C = H I J = N G O, H E C = G A J, and B J C = G F H.



G. B. V.

INTELLIGENCE.

THE PUBLIC SCHOOLS OF MAINE. — According to the report of Mr. John P. Craig, late Superintendent of the Common Schools of Maine, the number of pupils between four and twenty-one years of age, who attended the common schools of that State during the year 1856, was 241,097. The average wages of male teachers, per month, exclusive of board, was $27 30, and of female teachers $21 96. The whole number of public schools was 4,855, and the whole number of school-houses 3,682. The number of school-houses which are well constructed, commodious, and in good repair, is 1,784; not in good repair, 2,013. The value of all the school-houses is $895,987. Number of new school-houses built the past year, 127, valued at $129,-248. The amount of money raised by tax in 1855 for the support of schools in 1855-6, was $386,438, which was an excess over the amount required by law of $39,237. There was received from the State for the same purpose, $66,616, and the sum of $17,735 raised from local funds. The whole amount expended for school purposes during the year was $640,188. These figures all show a large and encouraging increase over the statistics of 1855.

THE SCHOOL-RIGHTS OF CHILDREN OF NON-RESIDENT PARENTS. — This subject is before the present, as it has been before previous legislatures. There is now

law forbidding children of non-resident parents to attend the public schools, but it is inoperative, and even its legality is questioned. For it, the committee on education, with a single exception, now propose to substitute the following: —

"All children between the ages of 5 and 15 years shall be entitled to attend the public schools of the city or town in which they shall reside for the time being: Provided, however, that if any child shall attend a public school in any city or town of this Commonwealth, other than that in which the parent or guardian of such child may reside, and shall have resided in such city or town for the sole purpose of attending such school, the parent or guardian of such child shall be liable to pay, to such city or town, for the tuition of such child, a sum equal to the average expense per scholar, for such school, for the period such child shall have so attended."

The illustrious Humboldt has had a very severe attack of illness, the consequence of which it was at first feared would be fatal. Having returned home at a late hour from a court ball, and having retired to rest, he was obliged to get up in the night, and fell, partially paralyzed on one side. Entire rest, and the care of one of the first physicians of Berlin, have now, however, almost completely restored him to his usual health. He has been twice visited by the King. The last accounts of the venerable philosopher announced that he could sit up during three or four hours in the day, and had resumed his literary occupation.

MATTHIAS PLANT SAWYER, Esq., of Boston, who died a few days since, leaving a fortune of half a million dollars, gave a legacy of $5000, the interest forever to go for the purchase of books for the Free Library of Newburyport. Mr. Sawyer was a native of that city, and sprung from a family of that name in Belleville.

Mr. Goold Brown, the grammarian, died at Lynn, Mass., March 31, after an illness of about nine days, and in the sixty-sixth year of his age. Mr. Brown was the author of the "Grammar of English Grammars," and for some years an eminent teacher in Lynn.

Mr. J. KIMBALL, formerly of the High School at Lowell, has been appointed Principal of the Dorchester High School. Salary $1500.

DARTMOUTH COLLEGE. — At the next Commencement of this College, George W. Curtis, Esq., of New York, will deliver the oration, and John G. Saxe the poem.

LITERARY RECORD.

MESSRS. D. APPLETON & Co. have just issued a new work, entitled "Things not generally known; a popular hand-book of facts not readily accessible in Literature, History, and Science," edited by DAVID A. WELLS. This volume, as its title indicates, is a general compilation of items of information on a great variety of subjects, which are difficult to be found in any of the ordinary encyclopædias or hand-books. It is based on a similar work recently published in England by John Timbs. The volume before us has been thoroughly revised, and is highly valuable as a reference-book for teachers. The same publishers have also issued an abridgment of the Government Narrative of the U. S. Expedition to Japan, under Commodore Perry. It has been carefully prepared by Robert Tomes, and will be read with interest by those who desire to be informed in regard to that distant country. One vol. 12mo. Illustrated. From the same press, "America and Europe," by Adam G. De Gurowski.

John P. Jewett & Co., of this city, will shortly publish "Hunter's Panoramic Guide from Niagara Falls to Quebec," in the same style as the European Hand Books. It covers the most interesting and beautiful section of our country, and if executed in good style, will be of indispensable value to the tourist.

Childs & Peterson, of Philadelphia, have in preparation a Life of Dr. Kane, which will comprise his correspondence with Lady Franklin and others.

Mrs. Horace Mann announces a new work under the title of "Christianity in the Kitchen."

Reviewers' Table.

Poems, *by Charles Swain.* Boston: Whittemore, Niles & Hall, 1857. pp. 304.

We shall not presume to class this delicate little volume of poems among the books designed for the school; but, nevertheless, there is a lesson to be learned from it, quite as important and quite as practical for good, as any that are to be found in books of instruction. It is the lesson of gentleness, kindness, and love, as manifested in our daily lives towards our companions in this life-journey of the earth. Swain is pre-eminently a heart-poet; a poet of the sensibilities; a love of a poet, playing all the time upon our kindly and better nature; upon our heart-strings, and inspiring us with friendship and affection towards our kind.

"Let us love one another, — not long may we stay;
In this bleak world of mourning some droop while 'tis day,
Others fade in their noon, and few linger till eve;
Oh! there breaks not a heart but leaves some one to grieve;
And the fondest, the purest, the truest that met,
Have still found the need to forgive and forget!
Then ah! though the hopes that we nourished decay,
Let us love one another as long as we stay."

The volume is full of pretty thoughts and pleasant realities, delicately done into rhyme and insinuating instruction with its touching melody and simple pathos.

"Ne'er be hasty in your judgment —
Never foremost to extend
Evil mention of a neighbor,
Or of one you 've called a friend!
Of *two* reasons for an action
Choose the better, not the worst;
Never let the meaner motive
Be the one you urge the first;
But be gentle with misfortune,
Never foremost to extend
Evil mention of a neighbor,
Or of one you 've called a friend." W.

The School Harp; *A Collection of Pleasing and Instructive Songs. Music and Words, original and selected. Designed for Schools and Singing Classes.* By E. H. Bascom. Boston: Morris Cotton.

This little work of 96 pages seems well adapted to the use of children. The music is pleasant for the ear, and the words are peculiarly appropriate to the various wants of the school-room. H.

School Amusements, or *How to make the School Interesting. Embracing Simple Rules for Military and Gymnastic Exercises, and Hints on the General Management of the School-Room.* By N. W. Taylor Root. New York: A. S. Barnes & Co.

The first part of this book is entitled, "Every Teacher his own Drill Master." It gives twenty modes of military drill, illustrated by sixteen full page engravings, which render all the movements easy to be understood. The second part treats of practical Gymnastics, and is illustrated by four plates. The third part treats of School Management. Under this head the author speaks of Order and Method. Administration, Lectures, Facts, Elections and Business Meetings, Moot Courts, Post Offices, the News, Library, Reading Aloud, Compositions, School Periodicals, Geographical Game, Arithmetical Game, and Dictation Exercises. The author's

plan is well carried out, and the book, like all that issue from the press of Barnes & Co., is well printed. It is a small octavo of 225 pages. H.

A Text Book of GEOMETRICAL DRAWING, *for the Use of Schools, in which the Definitions and Rules of Geometry are familiarly explained, the practical problems are arranged from the most simple to the most complex, and in their description, technicalities are avoided as much as possible;* with an INTRODUCTION TO ISOMETRICAL DRAWING, and an ESSAY ON LINEAR PERSPECTIVE AND SHADOWS: The whole illustrated with forty-eight steel plates. By William Minifie, Baltimore.

The character of this book is clearly and justly set forth in its title. It contains 156 neatly printed pages. The numerous engravings are beautifully executed, and the whole book has a most attractive appearance. The explanations of the problems are so clear that any boy ten years old could readily master them, and yet they would be of great value to the most advanced scholar. This book will, we believe, attract greater attention to the elegant and useful art of Geometrical Drawing. H.

EDITORIAL POSTSCRIPT.

MAY, 1857.

A WORD FROM NEW HAMPSHIRE. MESSRS. EDITORS: — Copies of the Massachusetts Teacher once in a while drift to us, and they are always welcome. The Teacher is now a standard Educational Journal; we wish there were rather more items of intelligence in its columns, but for real weightiness, it is "equalled by few and surpassed by none."

Things school-ward here in New Hampshire are looking prosperously. A new start has been given to the cause. Fine houses are going up in our cities. Portsmouth, Dover, and Nashua have some, equal to those of your own State. Manchester erected a noble one last year, and will end another this; Concord is about building a High School, with accommodations for schools of lower grades, and will expend at least $20,000 on it.

We have lately increased our educational force here in Concord, by electing Henry E. Sawyer, Esq., of Great Falls, as Master of the High School. He is a teacher of the true stamp, and of the right spirit; a thorough scholar, a strict disciplinarian, an earnest laborer. We think his coming a great thing for the Capital.

You have doubtless been informed that we have now a State Educational Journal, established on a permanent basis, with a large and rapidly growing subscription list, edited by one of the former editors of the Massachusetts Teacher, Rev. Wm. L. Gage, pastor of one of the churches in Manchester, and secretary of the school committee of that city. The journal is just the thing for us.

In the March number, we saw the announcement that the next annual meeting of the American Institute of Instruction will be held in the State, and quite near us. Pleasant news this. It will give a great impetus to the cause among us.

A good deal of excitement exists in the State on account of the charges made against Mr. Jonathan Tenney, formerly of Massachusetts, and now of Boscawen, in this State, on account of alleged embezzlement of public moneys, as School Commissioner of Hillsboro' County. That County raises a large sum for Institutes, (for 1857, $1300,) and it is not known in what way so much has been expended.

Truly Yours,

CONCORD, N. H., April 6th, 1857. A FRIEND OF THE CAUSE.